

Thermal Properties of (nano) ZnO-DMSO Colloidal Dispersions

E. Marín, A. Calderón^{C,S} and D. Díaz

*Centro de Investigación en Ciencia Aplicada y Tecnología Avanzada Unidad Legaria del IPN, México D.F.,
México
jcalderona@ipn.mx*

In the last years nanofluids, i.e., solid-liquid suspensions of nanoparticles and a base liquid, have received considerable attention due to their potential applications in several fields. One of the most exotic features – sometimes controversial- of these systems is that their thermal conductivity can exceed that of the base fluid and of the fluid with larger particles of the same kind. On the other hand, measurements of thermal properties of nanofluids have been limited to thermal conductivity determinations for which there is a lack of both, agreement between the results obtained in different laboratories and theoretical understanding of the mechanisms responsible for the reported enhancement.

In this work we will demonstrate the possibilities of the Inverse Photopyroelectric Method for the measurement of the effective thermal effusivity of the system consisting on ZnO nanoparticles suspended in a DMSO fluid as a function of the nanoparticles volumetric fraction. Using a phenomenological model we have estimated other thermal properties of the samples such as their thermal conductivity.